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10/673,382	09/26/2003	Bharat T. Doshi	Doshi 55-7-23-15-35	8409

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MENDELSOHN & ASSOCIATES, P.C.
1500 JOHN F. KENNEDY BLVD., SUITE 405
PHILADELPHIA, PA 19102

EXAMINER
URICK, MATTHEW T

ART UNIT	PAPER NUMBER
2113	

DATE MAILED: 09/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

	Application No.	Applicant(s)
Office Action Summary	10/673,382	DOSHI ET AL.
	Examiner	Art Unit	
	Matt Urick	2113	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
 Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>26 September 2003</u>.

2a)☒ This action is **FINAL**.   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

　　4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3, 5-16, 18-21, and 24* is/are rejected.

7)☒ Claim(s) *4,17,22 and 23* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *26 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

　　Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

　　Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

　　a)☐ All　b)☐ Some * c)☐ None of:

　　　1.☐ Certified copies of the priority documents have been received.

　　　2.☐ Certified copies of the priority documents have been received in Application No. _____.

　　　3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

　　* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
　　Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413)
　　Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

Final Rejection

Status of the Claims

Claims 1-3, 5-11, 14-16, 18-21, and 24 are rejected under 35 USC 102

Claims 12 and 13 are rejected under 35 USC 103

Claims 4, 17, 22, and 23 are objected to while containing allowable subject matter

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that

form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3, 5-11, 14-16, 18-21, and 24 are rejected under 35 U.S.C. 102(e) as

being anticipated by Lin (United States Patent Application Publication 2003/0065811

A1).

As per claim 1, Lin discloses:

A method for establishing a restoration path for a service in a mesh network

having a plurality of nodes interconnected by a plurality of links, the method comprising,

at a regional manager for one or more transit nodes of the restoration path:

receiving a service data structure comprising an identification of each link and

transit node in a primary path for the service (¶ 34: the primary path is determined); and

determining whether to reserve additional protection bandwidth, on an outgoing

link incident to at least one of the one or more transit nodes of the restoration path,

using the service data structure, wherein the outgoing link is part of the restoration path

(¶ 35 lines 16-28).

As per claim 2, Lin discloses:

The invention of claim 1, further comprising receiving, at the regional manager,

identification of the service (¶ 62: connection ID), identification of the outgoing link (¶ 35

lines 18-22: protection route), and bandwidth of the service (¶ 5).

As per claim 3, Lin discloses:

The invention of claim 1, further comprising reserving the additional protection

bandwidth on the outgoing link, if the regional manager determines that any additional

protection bandwidth is required (¶ 35 lines 28-29).

As per claim 5, Lin discloses:

The invention of claim 1, wherein: the service data structure is a primary path

vector having a plurality of entries corresponding to the nodes and links in the network

(¶ 7 a working route of nodes is designated beforehand); and

each entry of the primary path vector identifies whether the corresponding node

or link is part of the primary path for the service (¶ 7 a working route of nodes is

designated beforehand).

As per claim 6, Lin discloses:

The invention of claim 5, wherein the primary path vector is a primary path node-

link vector V_{pnl} (¶ 7: the term "path" instead of vector is used).

As per claim 7, Lin discloses:

The invention of claim 1, wherein the network is a mesh data network (¶ 2) that

transmits packetized data (¶ 62: data may be transmitted as packets).

As per claim 8, Lin discloses:

The invention of claim 1I, wherein: the regional manager has a network data

structure comprising, for each link in the network and each node or other link in the

network, a representation of a minimum amount of protection bandwidth required to be

reserved on said each link to restore service upon failure of said node or other link (¶ 35

lines 10-15);

the regional manager determines, using the network and service data structures,

whether the service requires the additional protection bandwidth to be reserved on the

outgoing link of the transit node of the restoration path (¶ 35 lines 24-29); and

the regional manager updates the network data structure if any additional

protection bandwidth is determined to be required for the service on the outgoing link (¶

35 lines 28-29).

As per claim 9, Lin discloses:

The invention of claim 8, wherein: the network data structure is an array of

vectors, wherein:

each vector in the array corresponds to a different link in the network (¶ 35 lines

10-15);

each vector in the array has a plurality of entries corresponding to the nodes and

links in the network (¶ 35 lines 10-15);

for a vector corresponding to the outgoing link, each entry in the vector

corresponding to a node or other link identifies the minimum amount of protection

bandwidth required to be reserved on the outgoing link to restore service upon failure of

the node or other link (¶ 35 lines 12-26); and

the service data structure is a primary path vector having a plurality of entries

corresponding to the nodes and links in the network, wherein (¶ 7 a working route of

nodes is designated beforehand):

each entry of the primary path vector identifies whether the corresponding

node or link is part of the primary path for the service (¶ 7 a working route of

nodes is designated beforehand).

As per claim 10, Lin discloses:

The invention of claim 9, wherein the regional manager determines whether the service requires any additional protection bandwidth to be reserved on the outgoing link by applying a vector addition operation between the primary path vector corresponding to the service and the vector of the array corresponding to the outgoing link (¶ 34: an addition operation may be performed to determine bandwidth constraints).

As per claim 11, Lin fails to disclose:

The invention of claim 10, wherein the vector addition operation comprises addition of corresponding vector entries, wherein the additional protection bandwidth is required if any vector entry sum exceeds a reserved bandwidth on the link (¶ 35 lines 26-29).

As per claim 14, Lin discloses:

A regional manager in a mesh network having a plurality of nodes interconnected by a plurality of links, wherein:

the regional manager manages one or more transit nodes of a restoration path for a service in the mesh network (¶ 35 lines 1-9); and

the regional manager is adapted to:

receive a service data structure comprising an identification of each link and transit node in a primary path for the service (¶ 34: a path is determined beforehand); and

determine whether to reserve additional protection bandwidth, on an outgoing

link incident to at least one of the one or more transit nodes, using the service data

structure, wherein the outgoing link is part of the restoration path (¶ 35 lines 16-28).

As per claim 15, Lin discloses:

The invention of claim 14, wherein the regional manager is further adapted to

receive identification of the service (¶ 62: connection ID), identification of the outgoing

link (¶ 35 lines 18-22: protection route), and bandwidth of the service (¶ 5).

As per claim 16, Lin discloses:

The invention of claim 14, wherein the regional manager is further adapted to

reserve the additional protection bandwidth on the outgoing link, if the regional manager

determines that any additional protection bandwidth is required (¶ 35 lines 28-29).

As per claim 18, Lin discloses:

The invention of claim 14, wherein:

the service data structure is a primary path vector having a plurality of entries

corresponding to the nodes and links in the network (¶ 7 a working route of nodes is

designated beforehand); and

each entry of the primary path vector identifies whether the corresponding node

or link is part of the primary path for the service (¶ 7 a working route of nodes is

designated beforehand).

As per claim 19, Lin discloses:

The invention of claim 18, wherein the primary path vector is a primary path

node-link vector V_{pnl}. (¶ 7: the term "path" instead of vector is used).

As per claim 20, Lin discloses:

The invention of claim 14, wherein the network is a mesh virtual-circuit data

network (¶ 2: mesh network; ¶ 62: Lin discloses that virtual paths are created through

the network, referring to them as "connections") that transmits packetized data (¶ 62:

data may be transmitted as packets).

As per claim 21, Lin discloses:

A method for establishing a restoration path for a primary service path in a mesh

network having a plurality of nodes interconnected by a plurality of links, wherein the

restoration path has been calculated, the method comprising:

receiving a service data record comprising an identification of each link and node

in the primary service path (¶ 34: The disjoint (working and protection) paths are

determined first, ¶ 35 lines 10-17: listing of all links and nodes in the network); and

determining for each link of the restoration path, based on the information in the

service data record, whether or not to reserve additional protection bandwidth on the

link of the restoration path (¶ 35 lines 24-29).

As per claim 24, Lin discloses:

The method of claim 21, wherein the step of determining is further based on a

network data record for the link comprising a representation of a minimum amount of

protection bandwidth required to be reserved on the link to service upon failure of each

link and node in the mesh network (¶ 35 lines 1-5: the minimum bandwidth possible is

allocated, ¶ 46 last 6 lines: every failure scenario is simulated).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

Claims 12 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Lin (United States Patent Application Publication 2003/0065811 A1) in view of Mo

(United States Patent Application Publication 2003/0037276).

As per claim 12, Lin fails to disclose:

The invention of claim 1, wherein the receiving of a service data structure

comprises supporting a signaling protocol interface.

Mo discloses a bandwidth reservation system which uses RSVP-TE protocol to

recover a data processing unit on a network (Mo ¶ 4). Mo discloses that this system will

enable a network to restore its original state, including recovered nodes and bandwidth

reservation without impacting network traffic (Mo ¶ 4-6). Lin also discloses that his

invention seeks to allocate protection bandwidth to a network (Lin ¶ 2), even in cases

where nodes are removed (Lin ¶ 5) or added (Lin ¶ 7). Using Mo's system would enable

a user to do this without impacting traffic on the network, increasing the quality of

service. Therefore, it would have been obvious to one of ordinary skill in the art at the

time of invention to incorporate RSVP-TE signaling protocol interface into the protection

bandwidth system of Lin, increasing the quality of service of the network while

maintaining protection bandwidth.

As per claim 13, Lin discloses:

The invention of claim 12, wherein the signaling protocol is reservation protocol

with traffic engineering extensions (RSVP-TE).

Mo discloses a bandwidth reservation system which uses RSVP-TE protocol to

recover a data processing unit on a network (Mo ¶ 4). Mo discloses that this system will

enable a network to restore its original state, including recovered nodes and bandwidth

reservation without impacting network traffic (Mo ¶ 4-6). Lin also discloses that his

invention seeks to allocate protection bandwidth to a network (Lin ¶ 2), even in cases

where nodes are removed (Lin ¶ 5) or added (Lin ¶ 7). Using Mo's system would enable

a user to do this without impacting traffic on the network, increasing the quality of

service. Therefore, it would have been obvious to one of ordinary skill in the art at the

time of invention to incorporate RSVP-TE signaling protocol interface into the protection

bandwidth system of Lin, increasing the quality of service of the network while

maintaining protection bandwidth.

Response to Arguments

Applicant's arguments, see remarks, filed 7/28/06, with respect to claims 4 and

17 have been fully considered and are persuasive. The rejection of claims 4 and 17 has

been withdrawn.

Applicant's arguments filed 7/28/06 with respect to claims 1, 5, 9, 10, 14, 18, and

21 have been fully considered but they are not persuasive.

As per claims 1 and 14, on pages 6-7 of the remarks, applicant argues that Lin

does not teach "receiving a service data structure comprising an identification of each

link and transit node in a primary path for the service." Examiner respectfully disagrees.

Paragraph 34 of Lin discloses determining the bandwidth to allocate to each link

of a pair of disjoint paths in the network. One of the disjoint paths is a working path, and

the other is the protection path (¶ 24). Additionally, a "path" includes a listing of links

between the source and destination (¶ 16 lines 9-16). Therefore, Lin's system meets the

limitations of a service data structure.

Applicant also argues that Lin does not disclose a regional manager for one or

more transit nodes of the restoration path. However, Lin discloses that the bandwidth

allocation may be performed by a human being, a network management system, a

control plane, or a computer (¶ 56). A computer, a human being, or a network

management system can be interpreted as a regional manager.

Applicant also argues that Lin does not disclose the "service data structure" of

claims 1 and 14 because Lin teaches using a list of all the links in the network.

However, claims 1 and 14 use the open language "comprising each link and transit

node in a primary path." A list of all nodes of the network would comprise each link of

the primary path, as well as the other links in the network.

As per claims 5 and 18, on pages 7-8 of the remarks, applicant argues that Lin

does not teach the use of vectors. Examiner respectfully disagrees.

A vector is a value with a source, a destination, and a magnitude. Lin discloses

that each link in the working and protection route must be examined to determine the

proper allocated bandwidth (¶ 7). In paragraph 47, Lin discloses that a path (ABDFG)

includes a series of source-destination links (AB, BD, DF, and FG), and a magnitude of

bandwidth (i.e: "bandwidth unit") to assign to each link. This method is not considered

distinct from the term "vector," since it includes all the elements of a vector by definition.

As per claim 9, on page 8 of the remarks, applicant argues that Lin does not

teach the use of vectors. Examiner respectfully disagrees.

A vector is a value with a source, a destination, and a magnitude. Lin discloses

that each link in the working and protection route must be examined to determine the

proper allocated bandwidth (¶ 7). In paragraph 47, Lin discloses that a path (ABDFG)

includes a series of source-destination links (AB, BD, DF, and FG), and a magnitude of bandwidth (i.e: "bandwidth unit") to assign to each link. This method is not considered distinct from the term "vector," since it includes all the elements of a vector by definition.

As per claim 10, on page 8 of the remarks, applicant argues that Lin does not teach the use of vector addition. Examiner respectfully disagrees.

A vector is a value with a source, a destination, and a magnitude. Lin discloses that each link in the working and protection route must be examined to determine the proper allocated bandwidth (¶ 7). In paragraph 47, Lin discloses that a path (ABDFG) includes a series of source-destination links (AB, BD, DF, and FG), and a magnitude of bandwidth (i.e: "bandwidth unit") to assign to each link. This method is not considered distinct from the term "vector," since it includes all the elements of a vector by definition.

Additionally, in paragraph 34, Lin discloses: "It is a simple calculation to determine the bandwidth required to support a working route; the bandwidth is simply the size of the connection. For example, if a link carries only working routes, the capacity needed is the sum of the working bandwidths." Therefore, Lin teaches the summation of vector quantities.

Allowable Subject Matter

Claims 4, 17, 22, and 23 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 4 contains the limitations:

As per claim 4, Lin discloses:

The invention of claim 3, further comprising transmitting from the regional

manager information about the additional protection bandwidth for communication to

each other node in the network.

Lin does not suggest communicating information regarding protection bandwidth

to every node in the network, only to the affected links. Since other nodes are not

affected by this protection bandwidth allocation, it would not be logical to send them the

information, since this would only consume network resources with excessive

messaging, while providing no benefit. Therefore, it would not be logical to combine the

limitations of claim 4 into the invention of Lin.

Claim 17 is objected to under the same grounds as claim 4.

Claim 22 states:

The method of claim 21, wherein the steps of receiving and determining are

performed at each node of the restoration path.

Claim 23 states:

The method of claim 21, wherein the method is performed at one or more

regional managers for each node of the restoration path.

Lin does not suggest determining protection bandwidth allocations at multiple

nodes in the network, only by one computer or network administrator (¶ 70).

Additionally, there is not a suggestion to perform the methods cited in the rejection

(figure 3, for example) at multiple nodes. Therefore, it would not be logical to combine the limitations of claim 22 or 23 into the invention of Lin.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Matt Urick whose telephone number is (571) 272-0805. The examiner can normally be reached on 8:00 - 4:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Beausoliel can be reached on (571) 272-3645. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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